that much money to public charity, there would be ample display of striking headlines for the eye of the common man for weeks. There should be, therefore, no criticism of the Committee on the Costs of Medical Care when they suggested that physicians should be paid for services rendered to the indigent in each community. Directors of the clinics have made an approximate estimate that the physicians of the attending staff have each given up two weeks of time annually to serve the patients in their clinics.

COMMENT

It is the consensus of opinion among social workers and directors of philanthropic institutions that the social status of the patients seeking medical care in clinics has undergone a marked change within the past two years. One person who is directing an out-patient department in one of the local clinics has recently said: "In 1931-1932 we have noted fewer foreigners in our clinic. In their place we have 75 per cent of American laborers, men of the skilled labor class, such as carpenters, plumbers, auto mechanics, dependents of clerks, actors, musicians, etc." This statement bears out the truth of the experience of the social workers who gave the answer to question three in this report.

In the matter of clinic fees, the average charge is twenty-five cents for the first registration, and ten cents for each following visit. A minimum charge is made for x-rays, for laboratory work and for special dressings to those who can afford to pay. The cost of the average patient per visit to the clinic, where such estimates have been made, is from $1.09 to $1.79, which is considerably cheaper than the cost per patient visit in the out-patient department of tax-supported institutions.

To resume our conclusions once more, an enormous amount of medical and surgical work is being done gratuitously by the attending staffs of the nontax-supported clinics and out-patient departments of the Los Angeles area. Such work has received little or no public recognition in the lay press and was not considered in surveys of the costs of medical care.

It is questionable whether the medical profession will be able, in the face of the present economic trend, to give so full-heartedly as it has in the past of its time and support to these institutions without some form of pecuniary reward.

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ETIOLOGY OF INGUINAL HERNIAE

By PHILIP STEPHENS, M. D.
Los Angeles

DISCUSSION *by W. W. Roblee, M. D., Riverside; Gunther W. Nagel, M. D., San Francisco; C. Lewis Gaulden, M. D., Los Angeles.*

THE average patient coming into an office today for examination and advice wants to know the reason for his disease or disability, and the average consultant attempts to explain, or to set forth, a reason for the existing condition. In so doing, it appears that he is either careless or neglects to make the proper distinction between cause and effect. Especially is this true in the discussion of herniae with our patients in general and its influence upon the public, lay and legal in particular. There is at present such a marked confusion of ideas regarding the causes of herniae even among the rank and file of our own profession that it is little wonder that legal boards, judges, insurance companies, and compensation commissions have so many opinions and varied rulings, all more or less confusing and conflicting in the interpretation thereof. We are continually being asked by the various interested state and legal bodies for our opinions and should, without hesitation, freely express ourselves. Unfortunately some of us do not, and in view of this fact, I am finding my excuse for briefly reviewing the subject.

COMPARATIVE ANATOMY

It is easy to assume that hernia has always existed in man, and we are told that biologically it is the direct result of his assumption of the erect posture. In all vertebrates, except man, the chief support of the abdominal contents is the upper abdomen, the lower abdominal wall having within it the inguinal rings, so with the added gravitation and the necessary openings, the fact that man (due to his erect posture) is the only sufferer from hernia is easily accounted for. It is said that hernia almost never occurs in the four-footed animals in spite of the fact that many of them have open processus vaginalis peritonae. We are also taught that as a result of our assuming the upright posture, there is quite a difference not only in the arrangement of the abdominal contents, but a marked lengthening of the mesenteric attachment, permitting the descent of the intestine through the inguinal canal. In animals the mesentery is given off at a right angle to the spine or posterior parietes; in man it descends almost parallel thereto.

Inasmuch as approximately 90 per cent of all herniae are inguinal (although the increase of postoperative hernia has somewhat lowered this figure to 82.3 per cent) we will, in a measure, confine our discussion to this particular type, namely, inguinal herniae.

ANATOMY

A brief review of the anatomy of the sac, the canal and the contiguous structures is at this point necessary, along with something of embryologic physiology. The persistence of the patent funicular process in the male and the canal of Nuck in the female provides the potential hernial sac an escape of the viscera downward, into and through the rings. If we accept this congenital or sacular theory (and it is accepted generally) it is interesting to know that in the male the funicular process is larger and longer, and both rings—internal and external—in the entire inguinal canal are much larger, owing to the size, descent, and ultimate destination of the descending testicle in late embryonic life. After birth the increasing size, weight and mobility of the gravitated testes exert

a definite drag on the process in an outward direction, tending to definitely enlarge and elongate it. In the female the process, even though patent in the canal of Nuck, is adherent to the round ligaments and subject to backward pull by the weight of the uterus.

An abdominal wall, then, with a definite well lubricated canal (open funicular sac) leading from the abdomen to the scrotum, small as it may be and no matter how well guarded by muscular structures and by highly organized reflex nervous mechanism, is a potential hernia and might be compared to a well-constructed dam with a small canal, or fault, through which water trickles, which erodes and as time goes on, through necessary pressure from within, gradually enlarges, so that finally (and usually when there is a sudden surge or increase in this pressure) there is an actual break. And, obviously, the cause for the break is not due to the pressure the dam was unable to withstand, but to the original fault at the beginning of the structure built to withstand this calculated normal pressure.

One of our medico-legal boards of an adjoining state ruled as follows: "Medical science teaches now what it has taught for the past twenty years and is now accepted as a medical scientific truth and corroborated as such by the foremost surgeons and anatomists of the world, that is, that hernia, or so-called rupture, is a disease ordinarily developed gradually and is very rarely the result of an accident."

THE DEVELOPMENT OF AN INGUINAL HERNIA

A true traumatic hernia, or one that results from, or is actually caused by one single act of trauma, is extremely rare and a curiosity, and must be the result of direct or cutting violence and not the result of strain or muscular effort. That a rupture, or sudden descent of part of the abdominal viscera, may appear more or less suddenly and due to, or contributed to, by intra-abdominal pressure or strain, we are willing to admit, that is, if the canal is so faultily equipped anatomically and there has been a period of preparation through the usual continuous and long-applied impulses of intra-abdominal force. That herniae appear most often in the laboring man subjecting himself to daily strain is not surprising, especially if we find this individual with a poor muscular support in the lower abdominal quadrants. Certain positions in exercise and labor predispose to the rather sudden appearance of the tell-tale tumor at the external abdominal opening, or within the canal. In going over a number of cases in which we have personally taken the histories, we are impressed with the fact that position is quite a definite factor when associated with strain. A strenuous pull, or push, with the feet and legs widely spread apart—the same effort with one foot on the ground, the other placed higher up and braced against a wall—clinging to a pole or braced in a tree with the thighs well apart and the body in a strained, twisted or awkward position while attempting to disentangle wire or line—have all been noted in my histories. In attempting to determine whether my observation of this position and its frequent appearance in my histories has any actual anatomical and physical bearing on the case, I find that the theory advanced by Keith in his so-called "Shutter theory," is fairly applicable.

While we are willing to admit that a preformed sac is not a hernia, the protrusion of the viscera into the sac predisposes to its formation, and it is some form of intra-abdominal pressure in the form of repeated strain which finally forces the viscera into the sac. Keith seems to reject the sacular theory and offers an explanation of the actual protrusion as the result of a strain. He describes the contractile, conjoined group of muscles of the lower abdomen as acting under reflex nervous mechanism against the Poupart's ligament in the manner of an inguinal "shutter" which serves to close the area of actual or potential weakness. Failure of the shutter to act quickly during abdominal strain may permit the hernial start or actual protrusion. In my opinion, this is augmented by the position of extreme abduction of the thighs, that being the position in which the shutter effect of the support of the lower abdominal quadrants is least effective.

Much depends also upon the character and length of the patent processus vaginalis when we consider the length of time necessary for the hernial development—the size of the hernia and the distance of its descent toward the scrotal sac. A short, small sac in a well-muscled individual will develop a small bubonocele, where the large, long type admits of more viscera and descends eventually to the scrotum. This process, however, is of necessity slower and is the result of a long period of simple strains incident to daily life. The incipient hernia gradually extends obliquely downward, enlarging, lengthening and thickening the sac into which more viscera is being crowded.

Coley-Mock and a group composed of representative surgeons and anatomists, all maintain that a hernia actually exists at birth and requires years to develop and is actually a congenital condition—never the result of a single increase of abdominal pressure. They justly contend that the so-called hernia of effort, due to long and continuous physical strain, always occurs in the congenitally deficient abdominal support.

RELATION TO INDUSTRIAL ACCIDENT RESPONSIBILITY

The surgeon or the practitioner who is consulted by a patient regarding a hernia should give the patient and himself the satisfaction of eliciting and recording an accurate, intelligent, and honest history as to its occurrence. Too often the history consists of, "I lifted something, or at least I must have lifted something several days ago and this morning—or last Saturday night when bathing—I noticed a lump." Later, when medico-legal complications arise, this history is added to and extracted from until the story fits the "one act of trauma" as described, the bolstered-up history

saddles the responsibility for hospitalization, surgeon's fees, and indemnity on some responsible financial agent and all is smooth. The surgeon knowing, or at least feeling, that he is not altogether guiltless, salves his conscience by thinking that he has given the poor working man the benefit of the doubt. The responsible party, or employer, is content to be able to unload the responsibility onto the insurance carrier feeling that he has paid for just this relief, and the carrier realizes that (in spite of the many wise, just, and scientific opinions which he has introduced as evidence) he is called upon to shoulder the expenses involved and assume the entire responsibility.

We will all agree that a traumatic hernia is extremely rare, usually occurring by direct violence and with definite tissue destruction, and that it may always be accepted as accidental without question.

THE OCCUPATIONAL HERNIA

The so-called effort, or occupational hernia, is the type which is always in medico-legal controversy and, as regards this condition, we should take a definite stand in the way of education of the lay bodies.

If the employer is to be made responsible for the herniae developing in his employees during the course of their employment, he should demand a physical examination before employment. In the larger corporations this is done; consequently when a hernia does occur during the period of their employment the cost involved in its care is accepted without demur. As a consequence, the smaller concerns which do not have, or cannot afford a physical examination for employees, get the "lame ducks" or rejections from the large corporations and the burden is placed where it least should be borne.

The whole problem as to the ordinary, indirect hernia might be properly settled by our industrial accident commissions accepting all as accidental, or accepting none which, from the standpoint of economy and legal controversy, would at least be a benefit or improvement over the present status of the question.

We thoroughly concur in the conclusions of Coley, Leigh, Walker, Hopkins, and Hutchison in their American Railway Association investigation and report on the subject. Their report ends with the following:

"What, then, is the remedy? The only thing needed to bring about greater harmony in the procedure of industrial commissions is to spread broadcast a clearer knowledge of the well-known medical and surgical facts relating to the etiology of hernia. We must recognize that medical and surgical truths permeate but slowly, especially when they have to overcome long established traditions too often supported by court decisions. The first is to convince the commissions and the courts of the well-established surgical fact that hernia is a disease and not the result of an accident. When this has been done a radical review of the present state laws regarding compensation in cases of industrial hernia will be forthcoming.

RECOMMENDATIONS

1. Render proper compensation for all cases of true traumatic hernia due to direct violence.

2. Make a physical examination of all applicants for positions in industry, no matter in what capacity. Such examinations will determine the fact whether or not a hernia was present at the time of examination.

3. Any case of hernia developing in the course of duty, incident to the man's daily work, should be treated as a disease due to special anatomical weakness on the part of the individual, for which the company is in no way responsible. If it is considered wise under certain circumstances to recognize any moral responsibility, let it be on an economic or humane basis. This moral obligation should be understood to be strictly limited to such employees who had been found apparently free from hernia at the time of previous physical examination.

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DISCUSSION

W. W. Roblee, M. D. (Glenwood Building, Riverside).—When the responsibility for disability due to industrial injuries is placed upon the employer or his insurance carrier the decision as to just what constitutes an injury becomes a pertinent and often a controversial point. This has been especially the case in regard to abdominal herniae. The insurance carriers soon learned of such opinions as that expressed by Coley-Mock, as quoted in this paper, to the effect that hernia always occurs in the congenitally deficient abdominal support, and for that reason they refused responsibility in all cases except those associated with direct trauma. The ailing employee, on the other hand, could frequently point to many years of activity in his employment with no pain, lump, or, at least to his untrained senses, to any other evidence of hernial protrusion, until at a certain day and hour while at work he felt something give in the groin and a sensitive palpable lump became evident. As pointed out by Doctor Stephens, many preëxistent herniae were twisted by a distorted history into the traumatic class and, on the other hand, meritorious cases were refused treatment.

The embryologic, anatomic, and physiologic facts brought out in this paper, and the resultant conclusions of the essayist, cannot be questioned, but the practical question remains as to what decision shall be made as to responsibility in these cases. In my opinion, the intent of the Industrial Accident law is that every disability in industry caused by accident shall be cared for by the industry and the man be returned to it as fit as before the accident or suitably compensated therefor. There are many of these border line or controversial conditions; for example, hernia, hyperthyroidism, neurosis, etc. There will continue to be this honest difference of opinion in regard to responsibility in these cases until provision is made for physical examination prior to employment. If physical disability is found the workman should then either be refused employment or disability waived on that point. Having been employed the workman should then be protected by a most liberal interpretation in these border-line cases.

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Gunther W. Nagel, M. D. (2000 Van Ness Avenue, San Francisco).—It is generally recognized that the majority, if not all, herniae are congenital in origin. It is probably often true that a man may first discover the presence of a hernia following some unusual muscular effort, just as a woman may discover a lump in her breast following a blow. It is not a simple question of cause and effect, as assumed by the patient, but the discovery of a preëxisting condition as a result of attention having been called to the part.

I agree with Doctor Stephens that we should be much more strict in our diagnosis of hernia due to

industrial injury. A lot of false notions regarding hernia have spread among employees of industrial concerns and these must be corrected by statements of the underlying cause of hernia and just decisions on the part of surgeons and of industrial referees.

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C. Lewis Gaulden, M. D. (326 Rives-Strong Building, Los Angeles).—Since the advent of the Workmen's Compensation Act the cause of inguinal hernia has ever been a topic of discussion. The pendulum swings first one way and then another. This should not be the case, as anatomy and pathology remain the same and do not change as do politics or religion. The term "rupture" is a misnomer and should be discarded.

Oblique inguinal hernia is due primarily to a congenital defect, and is not caused by any one act of violence, and comes on gradually. The defect is present, and anything that increases intra-abdominal pressure will tend to force abdominal contents into the waiting receptacle. Suppose, for instance, that it required one hundred acts of increased intra-abdominal tension to force a small amount of omentum into a preformed hernial sac; suppose, further, that ninety-nine of these acts consisted of coughing, sneezing, or straining at stool, and the hundredth act was due to lifting. Should the hundredth act be said to have caused the hernia? Absolutely not!

Section 3, Subsection 4, of the Workmen's Compensation Act states in part as follows:

"In case of aggravation of any disease existing prior to such injury, compensation shall be allowed only for such proportion of disability due to the aggravation of such prior disease as may reasonably be attributed to the injury."

It is only into this category that oblique inguinal hernia could possibly fit. How can one cure an aggravation of a hernia without curing the hernia itself?

I do not attach great importance to a medical examination for ruling out a hernia or the predisposition to the same. A small oblique hernia may be present at one time and absent another. No one can diagnose an empty preformed hernial sac. The proportion of hernias showing up in employees examined does not differ greatly from those unexamined. Of course the large complete hernias could be excluded by examination, but aside from this nothing is to be gained.

THE DOCTOR OF TOMORROW*

By A. Gatewood, M. D.
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IN order to limit my remarks, I think it would be well to define my subject, "The Doctor of Tomorrow." According to Webster, a doctor is one skilled in a profession or in some branch of knowledge. Naturally, by *doctor,* I mean not those skilled in the practice of "pathies," of which I understand you have so many, but one skilled in *medicine.* And *medicine,* as Vaughn has so well put it, "consists of the application of scientific discoveries to the prevention and cure of disease. All else which may go under the name of medicine is sham and fraud." . . .

In order to learn what my colleagues thought of the doctor of tomorrow, I asked several of them in my best Socratic fashion, "Do you want your boy to study medicine?" Dr. K. answered in his typical brusque fashion, "Not if I advise him. I don't want my boy to slave as I have done the past forty years. I'm going to make a banker of my boy."

Dr. P. unhesitatingly replied, "What! and starve to death? Doctors of the next generation will be paid a mere pittance by the state. All ambition will be stifled. I should say not!"

Dr. O. answered, "Yes, it's in our family blood and I'd like to see him carry on if he is so inclined. I think medicine has a great future. I envy him the opportunities of tomorrow."

And so at once it became evident to me that there are so many phases to the subject that I dared inquire no further. The economic future seems to be the one most discussed, judged by the comments of the medical journals, the heated discussions in current magazines and the daily press. I would like to pass over this phase with one suggestion. If some of the well-meaning philanthropists and legislators would cease their troublesome meddling into medical economics and establish a few foundations for the more adequate remuneration of the hard-working physician or a pension fund for the doctor incapacitated in line of duty, as they say in the army, instead of devoting the funds to the care of broken-down cats or what have you, the medical profession would work out a sane solution of its problems.

Medicine has made more progress during the past fifty years than in its entire preceding history, due to mechanical aids to our five God-given senses. We probably are no better philosophers than Plato or Pythagoras. Our ability to reason is not superior to that of Archimedes or Hippocrates or Harvey. But Augenburger and Laennec have put tools into our hands which make it possible to explore the field invisible, while the modern sciences of physics and chemistry have opened the way to the ultimate solutions of the problems of bacterial disease, degenerative processes, neoplastic disease, senescence, and even of death itself.

The other day the Nobel prize was awarded to Warburg for the demonstration of the fact that a tumor cell generates more heat than a similar normal cell. Imagine, then, a process so delicate that one could place an instrument on the calvarium and say with precision, "Not a brain cell working," or "The patient in question has an early cerebellopontine angle tumor which can be successfully irradiated without the crude methods of our so-called refined surgery." The surface of scientific medicine has barely been scratched. It has been said that we are approaching the end of an era of the most rapid development the world has ever known. If that be so, we are entering a period in which the tools and methods for undreamed of progress are thrust into our hands with the injunction to "carry on."

I agree with Dr. O. The future of medicine was never brighter than today. The medical student as I see him in my classes is often wiser than the teacher. Few men on faculties are as well grounded in the fundamental contributory sciences as their students. It is more important than ever before that teachers and pupils should

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* Abstract of some remarks made before the International Medical Club of Southern California, November 20, 1931.

* From the department of clinical surgery, Rush Medical College of the University of Chicago.